



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,782	08/08/2005	Takeyoshi Yamamoto	28951.5408	8218
27890	7590	09/11/2008		
STEPTOE & JOHNSON LLP 1330 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036			EXAMINER SCHEUERMANN, DAVID W	
			ART UNIT	PAPER NUMBER
			2834	
			MAIL DATE	DELIVERY MODE
			09/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/544,782

Applicant(s)

YAMAMOTO ET AL.

Examiner

DAVID W. SCHEUERMANN

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 8-11, 15, 21, 24-26 and 30-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12-14, 16-20, 22, 23, 27-29, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 4/30/2008 have been fully considered but they are not persuasive in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 6 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakitani, JP 2003018787 A in view of Miura et al., US 6341896. Wakitani, JP 2003018787 A shows:

A hydrodynamic bearing motor, comprising:

a shaft supported by a hydrodynamic radial bearing and a hydrodynamic thrust bearing to be rotatable in a relative manner (note abstract),

a sleeve for rotatably supporting the shaft via air, and,
and a driving motor, wherein

a magnet for trapping abraded powder is disposed in a connecting passage between an opening of the sleeve and an opening of the hydrodynamic bearing motor (note especially drawing 1 and magnetic fluid seal 10, 10a and 10b), and members forming the hydrodynamic radial

bearing and the hydrodynamic thrust bearing are made of an [austenitic stainless].

Wakitani, JP 2003018787 A does not expressly disclose, the bracketed features. Miura et al., US 6341896 discloses use of austenitic stainless, for the purpose of maintaining the gap in the hydrodynamic bearing as constant as possible, see the paragraph bridging columns 4 and 5. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the bearing materials as taught by Miura et al., US 6341896 in the device of Wakitani, JP 2003018787 A. One of ordinary skill in the art would have been motivated to do this to keep the gap in the bearing as constant as possible.

Re claims 3 and 4, note that Miura et al., US 6341896 specifically provides for the combination of austenitic stainless and a copper group metal for the specific purpose of maintaining "substantial equal" coefficients of thermal expansion as described in the paragraph bridging columns 4 and 5 of Miura et al., US 6341896.

Re claim 6, the specific optimal dimensional constraints of the magnet and connecting passage and flux density range thereof would have been discoverable through routine experimentation. The courts have established via, *in re* Aller, 105 USPQ 238 (CCPA 1955) that, "...even though applicant's modification results in great improvement and utility over prior art, it may still not be patentable if modification was within capabilities of one skilled in art; more particularly, where general conditions of claim are disclosed in prior art, it is not inventive to discover optimum or workable

ranges by routine experimentation. Thus the specific dimensional constraints of the magnet and flux density range would not patentable define over the art of record.

Re claim 34, note column 1, lines 12-18 of Miura et al., US 6341896

Claims 12 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 in view of Toshimitsu et al., US 5366298. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 discloses the invention substantially as claimed as set forth in the rejection of claim 1, supra. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 does not expressly disclose, "wherein at least one of facing surfaces forming the hydrodynamic radial bearing and the hydrodynamic thrust bearing has a ceramic coating." Toshimitsu et al., US 5366298 teaches ceramic surfaces of coating on bearings for the purpose of avoiding cracks, see column 5 lines 47-64. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a ceramic coating on a bearing of the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896. One of ordinary skill in the art would have been motivated to do this to resist cracking or peeling.

Claims 18, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 in view of Toshimitsu et al., US 5366298. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 discloses the invention substantially as claimed as set forth in the rejection of claim 1, supra. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 does not expressly disclose, "wherein at least one of

Art Unit: 2834

facing surfaces forming the hydrodynamic radial bearing and the hydrodynamic thrust bearing is coated with a diamond like carbon." Toshimitsu et al., US 5366298 teaches use of hydrogenated amorphous carbon film (a DLC), see columns 5 and 6, for the inherent purpose of providing a low coefficient of friction. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a hydrogenated amorphous carbon film (a DLC) film on a bearing of the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896, as taught by Toshimitsu et al., US 5366298. One of ordinary skill in the art would have been motivated to do this provide a low coefficient of friction.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 in view of Toshimitsu et al., US 5366298. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 discloses the invention substantially as claimed as set forth in the rejection of claim 1, supra. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 does not expressly disclose, "wherein of facing surfaces forming the hydrodynamic radial bearing and the hydrodynamic thrust bearing, a lubricating film is formed at least on the facing surface not being made of the austenitic stainless." Toshimitsu et al., US 5366298 teaches use of lubricant such as molybdenum disulfide, see column 2 lines 12-21, for the purpose of providing a low coefficient of friction. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a lubricating film on a bearing of the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896, as taught by

Toshimitsu et al., US 5366298. One of ordinary skill in the art would have been motivated to do this provide a low coefficient of friction.

Claims 2, 5, 7 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 in view of Toshimitsu et al., US 5366298. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 discloses the invention substantially as claimed as set forth in the rejection of claim 1, supra. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 does not expressly disclose, "and the other member (of the bearing) is made of a material harder than the austenitic stainless" or "wherein of facing surfaces forming the hydrodynamic radial bearing and the hydrodynamic thrust bearing, at least the facing surface not being made of the austenitic stainless is coated with a ceramic or a diamond like carbon,," or "wherein the magnet for trapping abraded powder has a length of 0.5mm or longer along the connecting passage, the connecting passage has a width of 2.0mm or less, and the magnet for trapping abraded powder has a surface magnetic flux density of 0.01 T or higher." Toshimitsu et al., US 5366298 discloses use of hydrogenated amorphous carbon coating or diamond-like coating (DLC) or ceramic on one or the other bearing surface, for the purpose of resisting wear, see column 5, lines 39-51. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a DLC or ceramic on the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 of the other bearing surface. One of ordinary skill in the art would have been motivated to do this to resist wear on the bearing.

Re claim 7 the specific optimal dimensional constraints of the magnet and flux density range thereof would have been discoverable through routine experimentation. The courts have established via, *in re* Aller, 105 USPQ 238 (CCPA 1955) that, "...even though applicant's modification results in great improvement and utility over prior art, it may still not be patentable if modification was within capabilities of one skilled in art; more particularly, where general conditions of claim are disclosed in prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. Thus the specific dimensional constraints of the magnet and flux density range would not patentable define over the art of record.

Re claims 13, 16 and 17, note that Toshimitsu et al., US 5366298 teach ceramic surfaces of coating on bearings for the purpose of avoiding cracks, see column 5 lines 47-64. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a ceramic coating on a bearing of the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896. One of ordinary skill in the art would have been motivated to do this to resist cracking or peeling.

Re claim 17, note column 5, lines 46-51 of Toshimitsu et al., US 5366298.

Claims 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 in view of Toshimitsu et al., US 5366298. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 discloses the invention substantially as claimed as set forth in the rejection of claim 5, *supra*. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 does not expressly disclose, "wherein at least one of

Art Unit: 2834

facing surfaces forming the hydrodynamic radial bearing and the hydrodynamic thrust bearing is coated with a diamond like carbon.” Toshimitsu et al., US 5366298 teaches use of hydrogenated amorphous carbon film (a DLC), see columns 5 and 6, for the inherent purpose of providing a low coefficient of friction. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a hydrogenated amorphous carbon film (a DLC) film on a bearing of the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896, as taught by Toshimitsu et al., US 5366298. One of ordinary skill in the art would have been motivated to do this provide a low coefficient of friction.

Claims 27, 28 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 in view of Toshimitsu et al., US 5366298. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 discloses the invention substantially as claimed as set forth in the rejection of claim 2, supra. The combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896 does not expressly disclose, “wherein of facing surfaces forming the hydrodynamic radial bearing and the hydrodynamic thrust bearing, a lubricating film is formed at least on the facing surface not being made of the austenitic stainless.” or “wherein the lubricating film is selected from a group including graphite, MoS₂, and PTFE.” Toshimitsu et al., US 5366298 teaches use of lubricant such as molybdenum disulfide (MoS₂), see column 2 lines 12-21, for the purpose of providing a low coefficient of friction. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a lubricating film on a bearing of the

Art Unit: 2834

combination of Wakitani, JP 2003018787 A and Miura et al., US 6341896, as taught by Toshimitsu et al., US 5366298. One of ordinary skill in the art would have been motivated to do this provide a low coefficient of friction.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID W. SCHEUERMANN whose telephone number is (571)272-2035. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached at (571) 272-2044. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 2834

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dws
September 11, 2008

/Karl I.E. Tamai/
Primary Examiner, Art Unit 2834